agri-fax Alberta AGRICULTURE

88-05341/

Agdex 114/33-28
Revised APRIL, 1987

VARIETAL DESCRIPTION OF ELLICE TWO-ROW SPRING BARLEY

Licensed: December 5, 1986, No. 2715

Origin and breeding:

Ellice is a malting barley tested as 7619-450-2 and TR 212, developed at the Agriculture Canada Research Station, Winnipeg, Manitoba. Ellice is derived from the complex cross C.I. 5791 / Parkland / Betzes / 3 / Betzes / Piroline / 4 / Akka / 5 / Centennial / 6 / Klages / 7 / Cambrinus / Tern. The final cross, made in 1976, was processed by a standard pedigree method. Single plant selections were made in each of the F_2 to F_5 generations. An F_6 line, designated Wpg 7619-450-2 was harvested as a bulk row and was tested as TR 212. Breeder seed was derived from a bulk of the progenies of 196 F_9 random single plant selections.

Varietal characteristics:

Plant characteristics

Growth habit: spring
Seedling growth habit: erect
Leaves: medium width and length; glabrous lower blade and sheath; light waxy bloom
Flag leaf: medium size; perpendicular at boot stage; light green auricles
Stems: mid-tall, slightly taller than Klages; medium waxy bloom; collar closed with slight nick; very short neck with slight curve below spike
Spike emergence: 0-8 cm above flag leaf
Plant height: medium; similar to Klages
Shattering resistance: good
Lodging resistance: good; better than Klages
Maturity: medium; earlier than Klages
Disease reaction: Ellice is resistant to powdery mildew (*Erysiphe graminis*); moderately resistant to stem rust (*Puccinia graminis*) and net blotch (*Drechslera teres*); moderately susceptible to false loose smut (*Ustilago nigra*) and covered smut (*Ustilago hordei*); susceptible to loose smut (*Ustilago nuda*), scald (*Rhynchosporium sp.*), blotch (*Septoria spp.*) and to common root rot (*Pythium sp.*).

Spike characteristics

Type: two-rowed
Shape: very slightly pyramidal
Density: semi-lax
Kernel overlap: one-quarter at maturity
Length: medium to long
Attitude: fully nodding at maturity
Lemma awn: rough; long; light green at tip
Glume: half lemma length; pubescent
Glume awn: rough; equal to glume length; light green
Stigma hairs: numerous
Rachis: edge hairs long and profuse at nodes; otherwise fine and delicate

Kernel characteristics

Type: covered
Hull: slightly wrinkled
Kernel: midsize; plump; wide in relation to length; similar to Fergus
Aleurone: yellow
Rachilla: mid-long; hairs long
Basal marking: incomplete horseshoe depression
Barbs on lateral veins: few to numerous
Quality: superior to Klages in malting and brewing properties

Inspection:

On the basis of kernel characteristics this variety would not be excluded from grades of barley higher than No. 1 CW.

Performance and adaptation:

Ellice was tested in extensive pilot and plant-scale malting and brewing trials from 1983 to 1985. Based on the results of these trials, Ellice appears to be acceptable as a two-row malting barley variety. Ellice yielded better than the check varieties across most soil zones in Western Canada (Table 2). Hectolitre weight and 1000 kernel weight were similar to check varieties (Tables 1 and 2). Ellice has good lodging resistance and good kernel plumpness. In Eastern Canada, Ellice did not perform as well as the better check varieties. Ellice is adapted to the traditional two-rowed barley areas of Western Canada.

Maintenance of breeder seed: Agriculture Canada, Experimental Farm, Indian Head, Saskatchewan

Canadian representative: SeCan Association

Recommended by: Expert Committees on Grain Breeding and Grain Quality

RV 1987 04 3M

Copies of this and related publications may be obtained from the Print Media Branch, Alberta Agriculture, 7000 - 113 Street, Edmonton T6H 5T6 or Alberta Agriculture's District Offices.

EXPERIMENTAL DATA

Table 1

Agronomic Performance of Ellice and Klages, Western Cooperative Two-Row Barley Tests, 1980-1982*

Year	Variety	Yield (kg/ha)	Test Weight (kg/hL)	1000 Kernel wt. (g)	Height (cm)	Lodging** (1-9)	Heading (days)	Maturity (days)
	Klages	4890	63.7	45.8	68.9	2.9	55.1	101.3
	Ellice	4940	63.4	45.0	66.5	1.8	54.1	98.8
1981	Klages	4190	64.4	44.3	77.8	3.1	55.8	97.7
	Ellice	4180	64.4	42.9	76.4	2.0	56.4	95.8
1982	Klages	4720	61.5	41.2	76.9	4.3	60.8	102.6
	Ellice	4810	63.9	43.3	79.3	1.9	60.0	99.8

* Locations were:

in 1980: Elrose, Saskatoon, Irricana, Regina, Swift Current, Scott, Watrous,Lethbridge (irrigated), Acme, Edmonton, Ft. Vermilion, Beaverlodge, Indian Head, Glenlea, Brandon, Melfort and Winnipeg.

in 1981: Acme, Scott, Regina, Elrose, Irricana, Lethbridge, Saskatoon, Swift Current, Brandon, Glenlea, Melfort, Portage la Prairie, Indian Head, North Battleford, Beaverlodge, Lacombe, Provost, Ft. Vermilion and Calmar.

in 1982: Calmar, Beaverlodge, Ft. Vermilion, Lacombe, Provost, Brandon, Glenlea, Indian Head, Melfort, North Battleford, Portage la Prairie, Acme, Elrose, Irricana,Lethbridge, Regina, Saskatoon, Scott, Swift Current and Watrous.

** 1 = best resistance

Table 2

Agronomic Performance of Ellice and Check Varieties, Western Cooperative Two-Row Barley Tests, 1983-1984*

Year	Variety	Yield (kg/ha)	Test Weight (kg/hL)	1000 Kernel wt. (g)	Plant height (cm)	Lodging** (1-9)	Heading (days)	Maturity (days)
1983	Harrington	4920	61.6	39.5	75.4	3.1	60.5	90.0
	Abee	4960	63.6	39.6	75.2	4.2	61.0	92.1
	Klages	4670	61.7	37.7	79.3	3.1	63.2	93.4
	Ellice	5250	63.9	41.3	81.3	2.2	61.5	90.5
1984	Harrington	4250	64.4	41.0	62.3	2.3	55.9	88.8
	Abee	4450	65.2	40.4	61.8	3.3	56.9	89.3
	Klages	4100	64.1	40.0	64.7	4.4	58.1	91.2
	Ellice	4140	64.4	39.7	65.3	1.8	57.1	89.0

* Locations were:

in 1983: Calmar, Beaverlodge, Ft. Vermilion, Lacombe, Provost,Brandon, Glenlea, Indian Head, Melfort, North Battleford, Portage la Prairie, Acme, Elrose, Irricana, Lethbridge, Regina, Saskatoon, Scott, Swift Current, and Watrous.

in 1984: as above with deletion of Lacombe and Watrous.

** 1 = best resistance

Table 3

Yield (kg/ha) by zones of Ellice and Klages, Western Cooperative Two-Row Barley Tests, 1980-1982

Year	Variety	Soil Zones Black	Brown	Black and Grey	Mean*
1980	Klages	5070	5160	3970	4890
	Ellice	5240	5130	3990	4940
1981	Klages	4490	3700	4630	4190
	Ellice	4580	3720	4440	4180
1982	Klages	5200	4770	3920	4720
	Ellice	5280	4870	3980	4810

* means overall station years

Table 4

Yield (kg/ha) by zones of Ellice and check varieties, Western Cooperative Two-Row Barley Tests, 1983-1984*

Year	Variety	Soil Zones Black	Brown	Black and Grey	Mean
1983	Harrington	4800	4880	5140	4920
	Abee	4920	4880	5150	4960
	Klages	4650	4460	5070	4670
	Ellice	5280	5150	5390	5250
1984	Harrington	5410	3670	3660	4250
	Abee	5380	3910	4110	4450
	Klages	5200	3370	3910	4100
	Ellice	5060	3550	3960	4140

* Locations were: Black and Grey soil zone 1983 - Calmar, Beaverlodge, Ft. Vermilion, Lacombe, Provost; 1984 - locations same but excluding Lacombe.

Black soil sone 1983 and 1984 - Brandon, Glenlea, Indian Head, Melfort, North Battleford, Portage la Prairie.

Brown soil zone 1983 - Acme, Elrose, Irricana, Lethbridge, Regina, Saskatoon, Scott, Swift Current, and Watrous; 1984 locations same, but excluding Watrous.

Table 5

Malting quality of Ellice and check varieties, Western Cooperative Two-Row Barley Trials, 1980-1981.

Year	Location	Variety	% Plump Kernels	1000 Kernel wt.(g)	Prot.* %	F.Ext.* %	70°Ext.* %	F/70°* %	Sol Prot.* %	S/T* %	D.P.* °L	Alpha-Amy* D.U.
1980	Winnipeg	Klages	90.7	43.2	12.6	80.4	73.7	6.7	5.74	45.6	137	61.3
		Ellice	95.4	42.7	13.3	80.3	76.4	3.9	6.68	51.3	140	49.1
	Saskatoon	Klages	88.2	37.9	14.6	78.7	71.5	7.2	5.37	39.8	152	54.0
		Ellice	97.0	39.8	13.9	78.5	75.2	3.3	6.00	45.5	180	60.5
	Acme	Klages	86.1	42.6	11.9	80.9	75.8	5.1	5.07	44.1	132	62.5
		Ellice	91.4	40.8	12.9	79.9	76.5	3.4	6.84	54.7	162	54.6
1981	Provost	Klages	92.0	44.7	14.5	77.3	71.1	6.2	5.82	39.9	159	55.3
		Ellice	95.3	41.8	14.0	76.8	73.7	3.1	6.53	46.6	167	57.4
	Irricana	Klages	88.7	39.2	10.1	81.0	77.4	3.6	4.35	45.3	114	55.3
		Ellice	89.8	37.0	11.3	79.4	75.4	4.0	5.23	47.1	143	57.2
	Brandon	Klages	81.5	37.7	13.9	77.8	72.6	5.2	6.08	43.4	165	45.8
		Ellice	93.4	37.4	13.6	77.7	74.5	3.2	6.65	48.5	175	46.6

* protein, fine extract, 70° extract, fine: 70% extract; soluble protein; protein modification, diastatic power, alpha-amylase.

Table 6

Disease reactions of Ellice and check varieties, Western Cooperatives Two-Row Barley Tests, 1980-1984*

Year	Variety	% Common Root Rot				Leaf Disease[1]					Scald[2]	Powdery Mildew	Stem Rust	Ustilago smuts % infected plants			Net blotch[4] Culture #			Scald Culture #		Septoria Culture #
		Sask	Scot	Bvld	FtVn	Scot	SwCt	Acme	Lacm	Leth	Bvld	(%)	Glen	nuda	hordei	nigra	102	858	857	837	Leth	692
1980	Klages	18	4	8	24	5.0	3.0	6.0	6.0	3.0	2.0	--	80S	87	0	2	S	S	S	S	--	S
	Ellice	24	21	6	17	4.0	4.0	8.0	7.0	3.0	2.0	--	40MR	72	16	39	R	S	S	S	--	S
						Glen	Laco	Bran	Lang	Crys	Irrc	Guel										
1981	Klages	6	24	11	14	4.0	5.0	7.0	4.0	5.0	4.0	13	70S	90	2	2	S	S	S	S	S	--
	Ellice	24	27	12	12	4.0	7.0	6.0	5.0	5.0	7.0	0	40MR	78	8	0	R	S	S	S	S	--
												Net Blotch[3] (1-9)										
						Irrc	Laco				Bvld	Bvld										
1982	Klages	19	73	--	--	3.0	4.0	--	--	--	5.3	1.5	70S	67	4	2	S	S	S	S	S	S
	Ellice	36	81	--	--	6.0	3.5	--	--	--	5.8	1.8	40MR-MS	80	10	8	R	S	I	S	S	S
1983	Harrington	65	57	--	--	--	--	--	--	--	6.5	--	90S	84	14	9	S	S	S	S	VS	S
	Abee	54	3	--	--	--	--	--	--	--	4.8	--	90S	42	11	6	MS-S	VS	S	S	S	S
	Klages	55	52	--	--	--	--	--	--	--	4.8	--	90S	54	5	5	S	VS	MS-S	S	MS	S
	Ellice	85	64	--	--	--	--	--	--	--	5.5	--	30R-MR	73	18	8	R	S	MS	S	S	S
												Lang										
1984	Harrington	64	76	--	--	--	--	--	--	--	--	4.0	50MR-MS	86	7	18	9	10	8	S	S	S
	Abee	67	72	--	--	--	--	--	--	--	--	3.5	80S	72	2	10	8	10	7	S	S	S
	Klages	81	95	--	--	--	--	--	--	--	--	5.0	80S	83	0	2	10	10	7	S	S	S
	Ellice	86	91	--	--	--	--	--	--	--	--	2.0	30MR	80	6	9	5	7	5	S	S	S

* Locations: for common root rot trials: Saskatoon, Scott, Beaverlodge, Ft. Vermilion; for leaf disease: Scott, Swift Current, Acme, Lacombe Lethbridge, Winnipeg, Langdon, (N. Dakota) and Irricana; for scald: Beaverlodge; for powdery mildew: Guelph; for stem rust: Glenlea

[1] Based on a scale of 1 (no symptoms) to 10 (severe symptoms)
Major components in 1980 were: Scott, Lacombe and Swift Current - scald and net blotch, Acme - scald, Lethbridge - net blotch, in 1981 were: Glenlea, Brandon - net blotch and spot blotch, Lacombe - scald and net blotch; Langdon

[2] In 1980 based on a scale of 0 (no symptoms) to 4 (severe symptoms), in 1981 the scale was 1 (no symptoms) to 10 (severe symptoms), in 1982 the scale was 1-9

[3] Based on a scale of 1 (no symptoms) to 9 (severe symptoms)

[4] Reaction types R = resistant or moderately resistant, MR = moderately resistant (moderately resistant to moderately susceptible), I = intermediate, MS = moderately susceptible, S = susceptible